

REMARKS

The Applicants respectfully request reconsideration of this application in view of the above amendments and the following remarks.

35 U.S.C. §102(e) Rejection - Kasamatsu

The Examiner has rejected former claims 24-25, 27-29, 31-34, 37-39 and 41-42 under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,288,833 issued to Kasamatsu (hereinafter referred to as “Kasamatsu”). These claims have been cancelled without prejudice. The Applicants respectfully submit that the new claims presented herein are allowable over Kasamatsu.

As amended, **claim 54** recites an apparatus comprising “*a first substrate having a waveguide embedded therein, the waveguide to propagate an optical signal; a second substrate bonded over the first substrate, the second substrate having a plurality of lasers, the plurality of lasers directly over the waveguide and spaced along a length of the waveguide, the plurality of lasers to emit light in a direction that is transverse to a direction of propagation of the optical signal in the waveguide, the light emitted from the plurality of lasers to pump the optical signal*”.

Kasamatsu does not teach or suggest these limitations. In particular, Kasamatsu does not teach or suggest: (1) a second substrate having lasers **bonded over** a first substrate having a waveguide embedded therein; (2) a plurality of lasers **directly over** a waveguide; (3) a plurality of lasers **spaced along a length** of the waveguide; or (4) lasers to emit light in a direction that is **transverse** to a direction of propagation of an optical signal in a waveguide.

Firstly, Kasamatsu does not teach or suggest a second substrate having lasers **bonded over** a first substrate having a waveguide embedded therein. FIGS. 3A, 5, 6, and 7 of Kasamatsu clearly show that light is provided to the waveguide from multi-mode semiconductor lasers 107, 19. The multi-mode semiconductor lasers 107, 19 are clearly located at the side or edge of the substrate 11. The lasers 107, 19 are not bonded over the substrate 11. Accordingly, Kasamatsu does not teach or suggest a second substrate having lasers bonded over a first substrate having a waveguide embedded therein.

Secondly, Kasamatsu does not teach or suggest a plurality of lasers **directly over** a waveguide. FIGS. 3A, 5, 6, and 7 of Kasamatsu clearly show that the multi-mode semiconductor lasers 107, 19 are not directly over the single-mode waveguide 12 or the multi-mode waveguides 13. Accordingly, Kasamatsu does not teach or suggest a plurality of lasers directly over a waveguide.

Thirdly, Kasamatsu does not teach or suggest a plurality of lasers **spaced along a length** of the waveguide. FIGS. 3A, 5, 6, and 7 of Kasamatsu clearly show that the multi-mode semiconductor lasers 107, 19 are not spaced along a length of the single-mode waveguide 12 or the multi-mode waveguides 13. The Applicants have previously presented similar arguments. In response, the Examiner has argued that the broadest reasonable interpretation includes one in which the claimed “length” of the waveguide is satisfied by the “width direction” discussed in Kasamatsu (see e.g., the remarks on page 6 of the Office Action mailed 02/10/2006). Applicants respectfully submit that this interpretation is unreasonable and inappropriate. The “length of a waveguide” is well known by those skilled in the art to be the usually elongated dimension in which light propagates. Even Kasamatsu refers to the length of the waveguide as the elongated dimension in which the light propagates. See e.g., FIG. 3A, column 5, lines 40-45, and column 3, line 58. Accordingly, the Examiner’s interpretation is not only inconsistent with the plain and ordinary meaning of “length of the waveguide” but is also inconsistent

with the explicit teachings of Kasamatsu. Accordingly, Applicants respectfully submit that this interpretation is unreasonable and inappropriate, and that Kasamatsu, when properly interpreted, does not teach or suggest a plurality of lasers **spaced along a length** of the waveguide.

Fourthly, Kasamatsu does not teach or suggest lasers to emit light in a direction that is **transverse** to a direction of propagation of an optical signal in a waveguide. FIG. 4 of Kasamatsu shows a so-called excitation ray 115 emitted by the laser. The excitation ray 115 of FIG. 4 is clearly not emitted in a direction that is transverse to a direction of propagation of the optical signal in the waveguide 12. FIGS. 5-7 of Kasamatsu show multi-mode semiconductor lasers 19 to emit light into multi-mode waveguides 21. The light emitted by the semiconductor lasers 19 would clearly not be emitted in a direction that is transverse to a direction of propagation of the optical signal in the waveguide 12. Rather, Applicants respectfully submit that it would appear that the light **emitted** by the semiconductor lasers 19 would appear to be in substantially the same direction as the light propagating in the waveguide 12. Accordingly, Kasamatsu does not teach or suggest lasers to emit light in a direction that is transverse to a direction of propagation of an optical signal in a waveguide.

Anticipation under 35 U.S.C. Section 102 requires every element of the claimed invention be identically shown in a single prior art reference. The Federal Circuit has indicated that the standard for measuring lack of novelty by anticipation is **strict identity**. *“For a prior art reference to anticipate in terms of 35 U.S.C. Section 102, every element of the claimed invention must be identically shown in a single reference.”* In *Re Bond*, 910 F.2d 831, 15 USPQ.2d 1566 (Fed. Cir. 1990).

Accordingly, Kasamatsu does not teach or suggest the limitations of claim 54. For at least this reason, claim 54 and its dependent claims are believed to be allowable over Kasamatsu.

Independent claims 58 and 71, and their respective dependent claims, are believed to be allowable for similar reasons.

35 U.S.C. §103(a) Rejection – Kasamatsu and Lange

The Examiner has rejected claims 26, 30, 36 and 40 under 35 U.S.C. §103(a) as being unpatentable over Kasamatsu in view of U.S. Patent No. 6594,420 issued to Lange (hereinafter “Lange”). Without admitting the appropriateness of combining these two references, the Applicants respectfully submit that the above-identified claims are allowable over any combination of Kasamatsu and Lange.

Kasamatsu does not teach or suggest the limitations of the independent claims. The discussion above is pertinent to this point. Lange does not remedy all of what is missing from Kasamatsu.

For at least these reasons, claims 54, 58, and 71, and their respective dependent claims are believed to be allowable over any combination of Kasamatsu and Lange, which combination may not even be appropriate.

35 U.S.C. §103(a) Rejection – Kasamatsu and Lawrence

The Examiner has rejected claims 35 and 43-45 under 35 U.S.C. §103(a) as being unpatentable over Kasamatsu in view of U.S. Patent No. 6,289,027 issued to Lawrence (hereinafter “Lawrence”). Applicants respectfully submit that the above-identified claims are allowable over any combination of Kasamatsu and Lawrence.

Firstly, Kasamatsu and Lawrence should not be combined. Kasamatsu discusses a waveguide that receives an optical signal and light from the edge, propagates the optical signal, and provides the optical signal from an opposite edge. Lawrence discusses a waveguide that receives light from the top, and an optical signal from the bottom, and couples light downward into an optical fiber that propagates an optical signal. It is not readily apparent to Applicants exactly how Kasamatsu and Lawrence could be combined, and the Applicants respectfully submit that the Examiner has provided insufficient explanation of how Kasamatsu and Lawrence could be combined. Furthermore, it seems likely to Applicants that modifications not taught or suggested in the prior art would be needed. Still further, there is no suggestion or motivation, either in these references, or in the knowledge generally available to one of ordinary level of skill in the art, to combine these references. For at least these reasons, Applicants submit that Kasamatsu and Lawrence should not be combined.

Secondly, even if Kasamatsu and Lawrence are combined, which doesn't even seem appropriate, the combination still does not teach or suggest the limitations of the independent claims. Kasamatsu does not teach or suggest the limitations of the independent claims. The discussion above is pertinent to this point. Lawrence does not remedy all of what is missing from Kasamatsu.

For at least these reasons, claims 54, 58, and 71, and their respective dependent claims are believed to be allowable over any combination of Kasamatsu and Lawrence, which combination does not even seem appropriate.

Conclusion

In view of the foregoing, it is believed that all claims now pending patentably define the subject invention over the prior art of record and are in condition for allowance. Applicants respectfully request that the rejections be withdrawn and the claims be allowed at the earliest possible date.

Request For Telephone Interview

The Examiner is invited to call Brent E. Vecchia at (303) 740-1980 if there remains any issue with allowance of the case.

Request For An Extension Of Time

The Applicants respectfully petition for an extension of time to respond to the outstanding Office Action pursuant to 37 C.F.R. § 1.136(a) should one be necessary. Please charge our Deposit Account No. 02-2666 to cover the necessary fee under 37 C.F.R. § 1.17 for such an extension.

Charge Our Deposit Account

Please charge any shortage to our Deposit Account No. 02-2666.

Respectfully submitted,

BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP

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